Guide F

Decontamination Guidelines

Guide F – Decontamination Guidelines

Only vaccinated personnel should perform the following decontamination procedures. Protective clothing including, gowns, gloves, shoe covers, caps, and masks should be worn. Although it was not considered a common mode of transmission during the smallpox era, infection with smallpox via contaminated bedding or fomites did occur rarely. Ideally, all disposable protective clothing worn by decontamination personnel should be placed in biohazard bags and autoclaved or incinerated before disposal. However, if needed because of shortages of protective clothing, reuseable protective clothing that can be laundered may be transported to the laundry in biohazard bags, then laundered using hot water (71 ºC) and bleach according to the standard proportions recommended by the manufacturer. The contaminated clothing should be wetted before sorting by laundry personnel as this should help prevent the aerosolization of contaminated particles during sorting. (see Fenner, F, Henderson DA, Arita I, Ježek Z, Ladnyi ID. Smallpox and its eradication. Geneva, Switzerland: World Health Organization; 1988: p.194, and Henderson DA, Inglesby TA, Bartlett JG, et al. Smallpox as a biological weapon; medical and public health management. JAMA. 1999; 281(22): 2127-2137.). Reuseable materials should be laundered on site and all personnel handling laundry must be recently vaccinated (within 3 years). Decontamination personnel should immediately shower with soap and water after the contaminated protective clothing is removed.

A. Reusable medical equipment

Reusable medical equipment should be cleaned with a 5% aqueous solution of a phenolic germicidal detergent then decontaminated using one of the following methods. The method selected should be based on manufacturer recommendations for decontamination of the equipment.

1. Autoclave decontamination- Manufacturers standard protocols for autoclave decontamination may be used.

2. Ethylene oxide decontamination - Equipment that must be decontaminated using this method should be bagged in plastic bags that are permeable to gaseous ethylene oxide. Humidify the material to be sterilized by injecting water into the plastic-bagged material to produce a relative humidity of 50 to 70%. Place the bags into an ethylene oxide sterilizer and allow an exposure of at least 24 hours at a concentration of at least 800 mg per liter ethylene oxide. The equipment should be allowed to fully aerate after ethylene oxide decontamination.

3. Solution soak decontamination - Soak equipment in a 5% aqueous solution of a phenolic germicidal detergent (e.g., industrial strength Lysol or Amphyl,) for at least 1 hour.

B. Medical waste

Medical waste should be bagged in appropriately marked biohazard bags and incinerated or autoclaved onsite if possible. Alternatively, if onsite autoclaving and incineration is not possible, medical waste may be transported to an appropriate facility for autoclaving or incineration. If incineration takes place in an area other than the facility, the outside of the bag should be sprayed with a suitable disinfectant (e.g., Lysol or household bleach) prior to transportation to the area for incineration. All personnel involved in handling, transportation, and disposal of medical waste from facilities where confirmed or potential smallpox patients are housed must have recent vaccination (within 3 years).

C. Surfaces

Contaminated horizontal surfaces may be decontaminated using a 5% aqueous solution of a phenolic germicidal detergent (e.g., industrial strength Lysol, Amphyl, or other commercial decontamination solution). All surfaces should be thoroughly wet with the solution. Allow the solution to stand for at least 20 minutes then wet vacuum or wipe with clean cloths or disposable wipes. If a wet vacuum is not available or practical and mops are used, disposable mop heads should be used for no more than 500 sq ft of floor area. The cloths or disposable wipes, mop heads, vacuum cleaner contents, and protective clothing worn by the decontamination personnel should be bagged and incinerated or autoclaved. If needed because of material shortages, re-useable protective clothing and cleaning materials that can be laundered may be bagged then laundered using hot water (71ºC) and bleach as outlined above. The vacuum cleaner should also be disinfected with a phenolic germicidal detergent (e.g., industrial strength Lysol, Amphyl, or other commercial decontamination solution) after use to further disinfect the nondisposable parts of the vacuum cleaner (nozzle, hose, etc.).

D. Protective clothing, bedding, linens, etc.

Contaminated protective clothing should be bagged immediately after removal and then incinerated or autoclaved. However, if needed because of shortages of protective clothing, reuseable protective clothing that can be laundered may be bagged then laundered with hot water (71 ºC) and bleach as outlined above.

Bedding, linens, clothing, or other reusable cloth materials may be autoclaved or laundered with hot water (71 ºC) and bleach as outlined above.

E. Room/Facility

Facilities or rooms that were used to house smallpox patients should be decontaminated once they are no longer used to house such patients. Once surface decontamination has been done, formaldehyde decontamination should be

performed if possible. Formaldehyde decontamination should only be performed by personnel experienced with this method of decontamination. An Amphyl fogger following manufacturer recommended procedures, may also be used. All disposable items should be bagged and incinerated or autoclaved.

1. All horizontal surfaces, furniture, fixtures, and walls should be decontaminated as outlined in C above.

2. All mattresses, mattress covers, pillows, curtains, clothing, and other removable cloth items should be bagged and autoclaved, incinerated, or laundered in hot water (71 ºC) and bleach as described.

3. Items that should not be autoclaved or incinerated should be bagged and decontaminated using ethylene oxide as outlined above.

4. Place paraformaldehyde in water in an electric deep-fat fryer in each of the spaces to be decontaminated (an electric skillet is a suitable substitution if a deep fat fryer is not available).

   The amount of paraformaldehyde to be used should be sufficient to dose the space at approximately 0.3 gm/ft^3, to yield 0.8% in air (7% to 73% in air will explode if ignited). The application rate of 0.3 gm/ft^3 equals 1 lb per approximately 1200 cu ft. The relative humidity of the space should be between 50% and 60% for best disinfection. The recommended temperature is approximately 75 °F (24 °C).

5. Open all drawers and doors within the area(s) to be decontaminated.

6. Remove all equipment, devices, or materials that may not withstand exposure to paraformaldehyde and decontaminate by using one of the other methods outlined above (whichever method is appropriate for the equipment, device, or material) or by thoroughly wiping down with a 5% aqueous phenolic germicidal detergent (e.g., Lysol or Amphyl).

7. Seal the room/facility to be decontaminated with masking or “duct” tape as paraformadehyde diffuses readily.

8. Turn off ventilation in the room/facility during decontamination.

9. Cover supply-air grilles with plastic and seal them with tape. Seal the exhaust-air duct downstream from the air filter in the same manner.

10. Set the deep-fat fryer(s) or electric skillet(s) to operate at approximately 350 °F (177 °C).

11. Use a timer to turn the unit(s) off after 2 hours.

12. Allow at least 12 hours to pass before entering the room/facility after the vaporization unit(s) have been turned off.

    A portable self-contained breathing apparatus must be used if it is necessary to enter the space within 24 hours unless the room/facility has been completely aired out and formadehyde levels have been checked.

13. After the room/facility has been aired to remove vapors, ventilation may be turned back on and personnel may enter the room.

If smallpox patients are housed in their own homes, the above procedure for paraformadehyde decontamination may be impossible or impractical. At a minimum, the following decontamination procedures should be performed:

1. All disposable items that came into contact with the smallpox patient should be bagged and incinerated. If incineration takes place in an area other than the home where the patient was housed, the outside of the bag should be sprayed with a suitable disinfectant (e.g., Lysol or household bleach) prior to transportation to the area for incineration.
2. Bedding, linens, clothing, curtains, or other cloth material that came into contact with the smallpox patient should be transported in biohazard bags to be laundered using hot water (71 ºC) and bleach or incinerated (see Step 1 above).
3. Surfaces, furniture, fixtures, and walls should be thoroughly cleaned with a 5% aqueous solution of a phenolic germicidal detergent (e.g., Lysol or Amphyl).
4. Carpets and upholstery should be cleaned using a 5% aqueous solution of a phenolic germicidal detergent (e.g., Lysol or Amphyl).

F. Vehicles (e.g., ambulance)

Ambulances should be decontaminated after transporting a smallpox patient(s) before reuse to transport nonsmallpox patients.

If possible, decontamination using wet cleaning followed by paraformadehyde or an Amphyl fogger as outlined above should be performed. Formaldehyde decontamination may be done by placing the fry pan directly inside the sealed vehicle or by driving the vehicle into a closed space (which can be made reasonably airtight), opening all doors and inside spaces of the vehicle and placing the fry pan inside the sealed space.

If either the formaldehyde or Amphyl fogger methods are not possible, wet decontamination and cleaning of the entire passenger compartment and all door handles should be done as outlined below:

1. All items that can be incinerated or autoclaved should be bagged and processed by one of these methods.
2. Heat-sensitive, reusable items should be sterilized using ethylene oxide as outlined above.
3. Larger items (such as the stretcher) should be decontaminated at the same time as the ambulance.
4. Spray the entire interior of the ambulance heavily (until the solution runs off) with a 5% aqueous solution of a phenolic germicidal detergent (e.g., Lysol or Amphyl). *Personnel performing this step should wear respiratory protection.*
5. Allow the solution to stand on all surfaces for at least 20 minutes.
6. Wet vacuum or wet clean with clean cloths, disposable wipes, or mops with disposable mop heads, all surfaces inside the ambulance and all outside door handles
7. Vacuum cleaner contents, cloths or disposable wipes, mop heads, and protective clothing worn by the decontamination personnel should be bagged and incinerated, autoclaved, or laundered as outlined above.
8. The vacuum cleaner should be disinfected with a phenolic germicidal detergent (e.g., Lysol, Amphyl, or other commercial decontamination solution) after use.

The above procedures may not be possible for private vehicles used to transport smallpox patients. At a <u>minimum</u>, the following decontamination procedures should be performed:

1. All disposable items in the vehicle should be bagged and incinerated.
2. All surfaces in the vehicle should be thoroughly wiped down with a 5% aqueous solution of a phenolic germicidal detergent (e.g., Lysol, Amphyl, or other commercial decontamination solution). The solution should be allowed to remain on the surfaces for at least 20 minutes before being removed.
3. Carpets and upholstery should be cleaned using a 5% aqueous solution of a phenolic germicidal detergent (e.g., Lysol, Amphyl, or other commercial decontamination solution). The solution should be allowed to remain on the carpets and upholstery for at least 20 minutes before being wiped off. Cloth upholstery should be allowed to completely dry before use.
4. All outside door handles should be thoroughly cleaned using a 5% aqueous solution of a phenolic germicidal detergent (e.g., Lysol, Amphyl, or other commercial decontamination solution). The solution should be allowed to remain on the door handles for at least 20 minutes before being wiped off.
5. Cloth material used to wipe down the inside of the vehicle should be laundered using hot water (71 ºC) and bleach or bagged and incinerated (see above).